



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,769	03/23/2001	John Kroeker	EZLK-002	5844

7590 10/08/2003

Toby H. Kusmer
McDermott, Will & Emery
28 State Street
Boston, MA 02109

EXAMINER

TRAN, VINCENT V

ART UNIT	PAPER NUMBER
----------	--------------

2655

DATE MAILED: 10/08/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,769

Applicant(s)

KROEKER ET AL.

Examiner

vincent v tran

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/23/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Object to specification for lacking application numbers on pages 1-2 and 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 7, 10, 12, 23, 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Morin et al. (U.S. Patent No. 5,748,841).

Referring to claim 1, Morin et al. disclose a language acquisition system comprising:

a computer processing device (dialogue manager, col.5, ln.45-49 and Fig.1, element 24) having access to a memory (dialogue databases, col.7, ln.50 and Fig.1, element 74);

a rich semantic grammar (syntactic-semantic grammar, col.3, ln.47-61) stored in the memory and comprising one or more grammars comprising syntactic information and semantic information (col.7, ln.61-63); and

a phonetic data processing module (I/O manager, col.5, ln.57 – col.6, ln.4 and Fig.1, element 26), executable by the processing device, the module comprising:

a phonetic searcher (the combination between recognizer and input handler, Fig.1, elements 30 and 34), configured to generate, as a function of the rich semantic grammar and a received phonetic stream comprised of phonetic estimates (identify phonemes and ultimately words output from recognizer, col.7, ln.30-32), a set of sequences comprising a set of best words (a list of possible interpretations, or semantic expressions) from the syntactic-semantic grammar corresponding to the phonetic estimates (col.6, ln.49-58); and

a semantic parser module, configured to generate a set of semantic data from the sequences and the syntactic-semantic grammar, wherein the set of semantic data includes all valid interpretations of the sequences (dialogue instruction, col.3, ln.47-61).

Referring to claim 2, Morin et al. further disclose the system or the method, wherein each of the sequences comprises set of words combined to define word paths (constraint tree, col.19, ln.50-55).

Referring to claim 7, Morin et al. further disclose the system, wherein the syntactic-semantic grammar is a grammar tree comprising nodes having certain of the

syntactic and semantic information associated with each of a plurality of the nodes (col.4, ln.5-15).

Referring to claim 10, Morin et al. further disclose the system or the method comprising:

(3) an application program, configured to receive the set of semantic data (a list of possible interpretations, or semantic expressions) and to define context information associated with the phonetic stream (the combination program of Input Handler and Recognizer col.6, ln.49-58 and col.7, ln.28-32 and 49-51);

(4) a semantic evaluator, configured to interpret the set of semantic data in accordance with the context information and to derive a linguistic result therefrom (col.7, 44-48; col.8, ln.17-37).

Referring to claim 12, Morin et al. further disclose the system or the method, wherein the set of semantic data is a semantic tree comprised of a set of nodes representing all valid interpretations of the sequences (col.3, ln.47-51; col.4, ln.5-16 and col.22, ln.33-45).

Referring to claim 23, Morin et al. further disclose a phonetic searcher (the combination between recognizer and input handler, Fig.1, elements 30 and 34), coupled to a database comprising a context free grammar (syntactic-semantic grammar is context free grammar, col.7, ln.49-51) including syntactic information (col.7, ln.61-63),

and configured to receive a phonetic stream of data (data stream, col.7, ln.29) and to generate a word list representing all valid words represented by the phonetic stream, as a function of the syntactic-semantic grammar (col.6, ln.49-58 and col.7, ln.47-61).

Referring to claim 26, Morin et al. further disclose a semantic parser (dialogue manager, col.5, ln.45-49) coupled to a database having a context free rich semantic grammar (syntactic-semantic grammar, col.3, ln.47-61) and configured to generate a set of semantic data as a function of a set of word sequences and the RSG, wherein the sequences include words derived from a phonetic stream (data stream, col.7, ln.29; col.6, ln.49-58 and col.7, ln.49-51) and the RSG, and the set of semantic data includes all valid interpretations of the sequences (col.3, ln.47-61; col.4, ln.5-16 and col.21, ln.63 – col.22, ln.45).

Referring to claim 29, Morin et al. further disclose a semantic tree evaluation tool coupled to an application program (the functional of input processor, col.11, ln.40-67) that defines a context and coupled to a memory including a semantic tree representing all valid interpretations of a phonetic stream, the evaluation tool (special function handler, col.11, ln.15-39) configured to generate a linguistic result as a single valid interpretation of the phonetic stream, in accordance with the context.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 8, 11, 13-15, 19-21, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., as applied to claims 1, 26 and 29, in view of Thompson et al. (U.S. Patent No. 4,688,195).

Referring to claims 3 and 15, Morin et al. do not specifically disclose the system or the method, wherein the phonetic searcher is configured to extract a context free grammar (CFG) comprising syntactic information from the grammar and is further configured to access the CFG to generate the set of best words.

Thompson et al. teach a context-free grammar (col.3, ln.68 – col.4,ln.1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Morin et al. with the searcher is configured to extract the context- free grammar, as taught by Thompson et al. in order to predict and choose the best words for sentence which defined by the grammar, because of the case of building and maintaining natural language interface thereby (col.3, ln.55-56).

Referring to claim 8, Morin et al. do not specifically disclose a system, wherein the semantic information includes one or more a categories, and each category dictates an interpretation of a corresponding word. Thompson et al. teach

such a system, (col.10, ln.25-38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Morin et al. to have the semantic information include one or more categories, as taught by Thompson et al., in order to easily define the desired natural language interface to a relational database, according to the query inputs received from a particular user.

Referring to claims 11, 21, 28 and 30, Morin et al. further disclose the system or the semantic evaluation tool, wherein the set of semantic data is represented as a tree of nodes representing all valid interpretations of the word sequences (col.3, ln.47-51 and col.4, ln.5-16).

Morin et al. do not specifically disclose the semantic evaluator is configured to determine a category at each node, as a function of the context information, and to apply to values at each node a corresponding category to determine the linguistic result.

Thompson et al. teach a semantic evaluator configured to determine a category at each node, as a function of the context information, and to apply to values at each node a corresponding category to determine the linguistic result (col.9, ln.60 – col.10, ln.38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Morin et al. with the semantic evaluator configured to determine the category at each node, as taught by Thompson et al., in order to easily define the desired natural language interface to a relational

database, according to the query inputs received from the user.

Claim 13 recites the same or similar limitation as claims 1 and 3, rejected above, and thus is rejected for the same reasons.

Referring to claim 14, Morin et al. further disclose the method, wherein each of the sequences comprises set of words combined to define word paths (constraint tree, col.19, ln.50-55).

Referring to claim 19, Morin et al. further disclose the method, wherein the syntactic-semantic grammar is a grammar tree comprising nodes having certain of the syntactic and semantic information associated with each of a plurality of the nodes (col.4, ln.5-15).

Referring to claim 20, Morin et al. further disclose the method comprising:

E. an application program, configured to receive the set of semantic data (a list of possible interpretations, or semantic expressions) and to define context information associated with the phonetic stream (the combination program of Input Handler and Recognizer col.6, ln.49-58 and col.7, ln.28-32 and 49-51);

F. a semantic evaluator, configured to interpret the set of semantic data in accordance with the context information and to derive a linguistic result therefrom (col.7, 44-48; col.8, ln.17-37).

5. Claims 4-7, 16-19, 24-25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al. in view of Thompson et al. as applied to claims 1, 13 and 26 further in view of Crespo et al. (U.S. Pub. No.2001/0041978).

Referring to claims 4-5 and 16-17, in combination of Morin et al. and Thompson et al., they disclose the system or the method of processing phonetic data, wherein the phonetic searcher includes a grammar builder (trees, col.4, ln.5-16) configured to selectively combine words from a set of sequences comprising a set of best words (a list of possible interpretations, or semantic expressions) from the syntactic-semantic grammar corresponding to the phonetic estimates (col.6, ln.49-58).

Morin et al. and Thompson et al. do not specifically disclose the system or the method, wherein

each of the phonetic estimates has a fixed start time and a plurality of end times, and wherein there is a score associated with each end time corresponding to the likelihood that a given phonetic estimate is a word or a syllable in the grammar; and

the phonetic searcher includes a grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding to the words.

Crespo et al. teach the system or the method, wherein each of the phonetic estimates has a fixed start time (starts at time 0) and a plurality of end times (ends just before time t), and wherein there is a score associated with each end time

corresponding to the likelihood that a given phonetic estimate is a word or a syllable in the RSG (Fig.3 and 5, paragraphs [0052], [0053], [0058], [0066], [0090]) ;and

the phonetic searcher includes a grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding to the words (paragraphs [0044], [0052]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Morin et al. with the score associated with each end time corresponding to the phonetic estimate in a word or a syllable in the grammar and to include a grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding to the words, as taught by Crespo et al., in order to improve the accuracy speech recognition by allowing for different speaking rates.

Referring to claims 6 and 18, in combination of Morin et al. and Thompson et al., they disclose the phonetic searcher configured to combine the words (col.6, ln-49-58).

Morin et al. and Thompson et al. do not specifically disclose the phonetic searcher is using dynamic programming.

Crespo et al. teach that it is known to use the option of a dynamic programming (DP) is to align words (paragraph [0013]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system of Morin et al. in view of Thompson et al. with the technique of using dynamic programming to combine the words, as taught by Crespo et al., in order to improve the way to reduce the computation burden (paragraph [0013]).

Referring to claim 24, in combination of Morin et al. and Thompson et al., they disclose a grammar builder (trees, col.4, ln.5-16) coupled to a database comprising a context free grammar (syntactic-semantic grammar is context free grammar, col.3, ln.47-51 and col.7, ln.49-51), including syntactic information (col.7, ln.61-64), and coupled to a database comprising a set of valid words corresponding to a stream of phonetic estimates (phonemes) from the syntactic-semantic grammar corresponding to the phonetic estimates (col.6, ln.49-58 and col.7, ln.49-51).

Morin et al. and Thompson et al. do not specifically disclose the grammar, wherein each of the phonetic estimates has a fixed start time and a plurality of end times, and wherein the grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding the words to be combined.

Crespo et al. teach a system, wherein

each of the phonetic estimates has a fixed start time and a plurality of end times, and wherein there is a score associated with each end time corresponding to the

likelihood that a given phonetic estimate is a word or a syllable in the RSG (Fig.3 - 5, paragraphs [0052], [0053], [0058], [0066], [0090]); and

the phonetic searcher includes a grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding the words to be combined (paragraphs [0044], [0052]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a system of Morin et al. with the score associated with each end time corresponding to the phonetic estimate is a word or a syllable in the grammar and the phonetic searcher includes a grammar builder configured to selectively combine words from the set of best words into sequences, as a function of the start time and end times of the phonetic estimates corresponding to the words, as taught by Crespo et al., in order to improve the accuracy speech recognition by allowing for different speaking rates.

Referring to claim 25, Morin et al. do not specifically disclose a grammar builder, wherein for each phonetic estimate, a score is associated with each of the end times, and wherein the score is related to a probability that the phonetic estimate is a certain word or syllable from the context free grammar.

Crespo et al. teach a system, wherein for each phonetic estimate, a score is associated with each of the end times, and wherein the score is related to a probability

that the phonetic estimate is a certain word or syllable from his grammar (paragraphs [0052]; [0058]; [0087] - [0090]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the grammar builder of Morin et al. with having the score functional, as taught by Crespo et al., in order to improve the accuracy of the conversation between machine and human by allowing for different speaking rates.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., as applied to claim 1 above, in view of Tennant et al. (U.S. Patent No. 4,829,423).

Morin et al do not specifically disclose the system, wherein the semantic information includes one or more operators, and each operator defines a manner of combining a plurality of words.

Tennant et al. teach the system, wherein the semantic information includes one or more operators (and, or, of), and each operator defines a manner of combining a plurality of words (and, or, of; e.g. in query display of Fig.7).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the semantic information of Morin et al. with a logical structure, as taught by Tennant et al., in order to improve the logical query structure indicated by the operator.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Elworthy (U.S. Patent No. 6,505,157) teaches a method and apparatus for generating data in a processor usable form from input data in the form of units in a natural language.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner **Vincent V. Tran** whose E-mail address:

Vincent.tran@USPTO.GOV.

Phone number: (703) 305-1817

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To, can be reached on (703) 305-4827. Any inquiry of a general nature or relating to the status of this application or **IF PAPER IS MISSING FROM THIS OFFICAL PACKAGE, PLEASE CALL Technology Center 2600 Customer Service at (703) 306-0377 FOR THE SUBSTITUTIONS OR COPIES.**

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Dr, Arlington VA, Sixth Floor (Receptionist, Tel. No. 703-305-4700).

Application/Control Number: 09/815,769
Art Unit: 2655

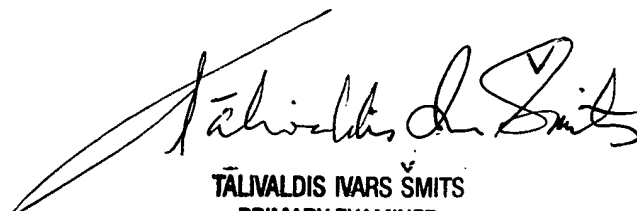
Page 15

Art Unit 2655

VINCENT V. TRAN



Date: September 22, 2003



TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER